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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

AUVE, GLENN ALLEN

ART UNIT PAPER NUMBER

2111

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/654,544	Applicant(s) RENGARAJAN, SRIKANTH	
	Examiner Glenn A. Auve	Art Unit 2111	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24 is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6,9,12,20-23 and 25-28 is/are rejected.
- 7) ☒ Claim(s) 2,5,7,8,10,11,13-19,29 and 30 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "106" has been used to designate generic requesters, the NIC/transceiver and the memory controller. The multiple requesters should be designated individually with numbers such as 106-1, 106-2, etc or 106a, 106b, etc. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "106" and "110" have both been used to designate the NIC/transceiver and "104" and "106" have both been used to designate the memory controller. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and

informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because in fig. 4, the output branches of the decision box 406 are not both labeled. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 9 and 10 are objected to because of the following informalities: Claim 9 is objected to because it should contain a comma after "network controller" on line 4, and "an application accelerators" on line 6 is grammatically incorrect.

In claim 10, lines 2-3, "based on a number or requests" should be "based on a number of requests". Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 20-23 and 25-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 is rejected because it is not clear what is meant by “an arbiter to generate a bus-activity indicator indicating activity of a system bus activity” on lines 2-3. Specifically the phrase “indicating activity of a system bus activity” is unclear.

Claims 21-23 are rejected because they depend on claim 20.

Claim 21 is also rejected because it is not clear what is meant by “generates the bus-bandwidth usage indicator based bus transactions utilized by the memory controller”. There appear to be some words missing from this passage.

Claim 25 is also rejected because it is not clear what is meant by “generates the bus-bandwidth usage indicator based bus transactions utilized by the memory controller”. There appear to be some words missing from this passage.

Claims 26 and 27 are rejected because they depend on claim 25.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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8. Claims 1,3,4,6,9,12, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kamemaru, U.S. Pat. No. 6,341,334 B1.

As per claim 1, Kamemaru shows a method comprising predicting when to generate a bus request based on bus-usage efficiency and bus-bandwidth usage (abstract, fig.16, and at least col.20, line 52 – col.21, line 64). Kamemaru shows all of the steps recited in claim 1.

As for claim 3, the argument for claim 1 applies. Kamemaru also shows generating the bus request ahead-of-time based on the predicting (as noted above, abstract and cols. 20-21). Kamemaru shows all of the steps recited in claim 3.

As for claim 4, the argument for claim 3 applies. Kamemaru also shows receiving a bus-activity indicator from a bus arbiter indicating system bus activity during a prior system-bus observation window (col.20, lines 52-67), and wherein predicting further comprises predicting when to generate the bus request ahead-of-time based on the bus-activity indicator (cols. 20-21). Kamemaru shows all of the steps recited in claim 4.

As for claim 6, the argument for claim 4 applies. Kamemaru also shows that when the bus-activity indicator indicates that the system bus is busy, predicting comprises predicting how early to generate the bus request ahead-of-time based on the bus-activity indicator, a bus-usage efficiency indicator and a bus-bandwidth usage indicator (cols. 20-21 as noted above). Kamemaru shows all of the steps recited in claim 6.

As for claim 9, the argument for claim 1 applies. Kamemaru also shows that at least one of a plurality of requesters generate bus requests ahead-of-time based on the predicting, wherein the requesters comprise one or more of a memory controller, a direct memory access unit, a network interface, a digital signal processors, a network controller a wireless local area network controller, a signal processor, a floating-point unit, an application accelerators, or a data

acquisition device (fig.16, wherein the requester is a memory controller). Kamemaru shows all of the steps recited in claim 9.

As per claim 12, Kamemaru shows a memory controller comprising: first logic circuitry to generate a bus-usage efficiency indicator and a bus-bandwidth usage indicator (fig.6) ; and second logic circuitry to predict when to generate a bus request based on the bus-usage efficiency indicator and the bus-bandwidth usage indicator (fig.16). Kamemaru shows all of the steps recited in claim 12.

As per claim 20, Kamemaru shows a processing system comprising: an arbiter to generate a bus-activity indicator indicating activity of a system bus activity during a prior system-bus observation window (col.20 as noted above); a memory controller to predict when to generate a bus request based on the bus-activity indicator, a bus-usage efficiency indicator and a bus-bandwidth usage indicator and to generate the bus request ahead-of-time based on the prediction (fig.16); and synchronous memory coupled to the memory controller (fig.1). Kamemaru shows all of the steps recited in claim 20.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kamemaru in view of what was well known in the art.

As for claim 28, Kamemaru shows predicting when to generate a bus request based on bus-usage efficiency and bus-bandwidth usage (abstract, fig.16, and at least col.20, line 52 –

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col.21, line 64). Kamemaru shows the predicting is performed using hardware, not a storage medium having stored thereon instructions, that when executed by a computing platform, result in the predicting. However, Official Notice is taken that it is well known in the art that such systems can be implemented in either hardware or software. It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the predicting shown by Kamemura using software instead of hardware in order to be able to easily test it as well as make changes quickly and cost-effectively.

Allowable Subject Matter

11. Claims 2,5,7,8,10,11,13-19,29, and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: As for claim 24, the prior art does not show the wireless communication device comprising a wireless network interface in combination with prediction limitations.

Conclusion

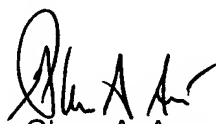
13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The other cited references show predictive arbitration but do not show the limitations claimed by applicant. The reference to Marisetty generating early bus requests but does not show the other limitations claimed.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenn A. Auve whose telephone number is (571) 272-3623. The examiner can normally be reached on M-F 8:00 AM-5:30 PM, every other Friday off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on (571) 272-3632. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Glenn A. Auve
Primary Examiner
Art Unit 2111

gaa
21 November 2005